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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,656	02/07/2002	Eric M. Prophet	269/132	3328

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EXAMINER

LOKE, STEVEN HO YIN

ART UNIT PAPER NUMBER

2811

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/072,656

Applicant(s)

PROPHET, ERIC M.

Examiner

Steven Loke

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3-15,17-26,39 and 40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-15,17-26,39 and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

1. Claims 1, 3-15, 17-26, 39 and 40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification (page 3, lines 4-10, page 5, lines 15-22, page 6, lines 16-22) discloses the Micro-Electro-Mechanical System (MEMS) devices having a plurality of spaced protuberances in the passivation layer to alleviate stiction between the beam or the microstructure of the MEMS and the underlying substrate surface. It means there would be no contact area formed between the beam or the microstructure of the MEMS and the underlying substrate surface. The specification never discloses the microstructure being moveable toward the passivation layer so as to touch the passivation layer as claimed in claim 1. The specification also never discloses the beam being moveable toward the passivation layer so as to touch the passivation layer as claimed in claim 13.

2. Claims 7-10 and 21-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Since claims 1 and 13 disclose the passivation layer is patterned to form a plurality of spaced protuberances, it is unclear how the passivation layer is patterned to form a mesh as claimed in claims 7 and 21. It is because the mesh-shaped passivation layer does not have a plurality of spaced protuberances as claimed in claims 1 and 13.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 5, 13, 14, 15, 17, 19, 39 and 40 insofar, as in compliance with 35 USC 112, are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Volant et al.

In regards to claim 1, Volant et al. show all the elements of the claimed invention in figs. 5, 6 and 19A. It is a Micro-Electro-Mechanical System apparatus, comprising: a substrate (col. 4, line 65 to col. 5, line 3); a passivation layer [20] on the substrate, the passivation layer having a top surface; and a microstructure [160] suspended above the substrate, the microstructure having a bottom surface facing the top surface of the passivation layer, the microstructure being moveable toward the passivation layer so as to touch the passivation layer (fig. 19A); wherein the passivation layer is patterned to form a plurality of spaced protuberances (the insulating layers formed between the wirings [30, 40, 50]).

In regards to claim 3, Volant et al. further disclose the bottom surface of the microstructure is substantially flat.

In regards to claim 5, Volant et al. further disclose at least one of the protuberances has a rectangular cross section.

In regards to claim 39, Volant et al. further disclose the passivation layer [20] is made of silicon oxide.

In regards to claim 13, Volant et al. show all the elements of the claimed invention in figs. 5, 6 and 19A. It is a Micro-Electro-Mechanical System apparatus, comprising: a substrate (col. 4, line 65 to col. 5, line 3); a passivation layer [20] on the substrate, the passivation layer having a top surface; a support [110] attached to the substrate; and a beam [160] attached at one end to the support and suspended above the substrate, the beam having a bottom surface facing the top surface of the passivation layer, the beam being moveable toward the passivation layer so as to touch the passivation layer (fig. 19A); wherein the passivation layer is patterned to form a plurality of spaced protuberances (the insulating layers formed between the wirings [30, 40, 50]).

In regards to claim 14, Volant et al. further disclose a second support (the vias on the right side of fig. 5) attached to the substrate and wherein the beam is attached to the second support at a second end.

In regards to claim 15, Volant et al. further disclose a bottom electrode [50] on the substrate and underneath the bottom surface of the beam.

In regards to claim 17, Volant et al. further disclose the bottom surface of the beam is substantially flat.

In regards to claim 19, Volant et al. further disclose at least one of the protuberances has a rectangular cross section.

In regards to claim 40, Volant et al. further disclose the passivation layer [20] is made of silicon oxide.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 6, 11, 12, 18, 20, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Volant et al.

In regards to claims 4 and 18, Volant et al. differ from the claimed invention by not showing at least one of the protuberances has a square cross section. It would have been obvious to one of ordinary skill in the art for at least one of the protuberances has a square cross section because it depends on the shape of the wirings.

In regards to claims 6 and 20, Volant et al. differ from the claimed invention by not showing at least one of the protuberances has a hexagonal cross section. It would have been obvious to one of ordinary skill in the art for at least one of the protuberances has a hexagonal cross section because it depends on the shape of the wirings.

In regards to claims 11 and 25, Volant et al. differ from the claimed invention by not showing the passivation layer comprises polyimide. It would have been obvious for the passivation layer comprises polyimide, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

In regards to claims 12 and 26, Volant et al. differ from the claimed invention by not showing the passivation layer comprises silicon nitride. It would have been obvious for the passivation layer comprises silicon nitride, since it has been held to be within the

general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

7. Applicant's arguments with respect to claims 1, 3-6, 11-15, 17-20, 25, 26, 39 and 40 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (571) 272-1657. The examiner can normally be reached on 7:50 am to 5:20 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sl  
March 12, 2004

Steven Loke  
Primary Examiner  
